

Application No. 10/087,566

REMARKS

By this Amendment, claims 25-72 are canceled, and new claims 73-124 are added. After entry of this Amendment, claims 73-124 are pending.

In the Office Action mailed December 12, 2005, claims 25-72 were variously rejected under 35 U.S.C. § 103(a) as unpatentable over one or more of U.S. Patent Nos. 5,965,193 (hereinafter "Ning"), 4,222,774 (hereinafter "Boutin"), 6,153,025 (hereinafter "Auran"), 6,297,549 (hereinafter "Hiyoshi"), and 6,122,170 (hereinafter "Hirore"). Claims 25-72 have been canceled without prejudice.

Claims 73-124 are new and therefore were not treated in the rejections of the Office Action. New claims 73-98 are directed to insulating substrate boards for a semiconductor. New claims 99-124 are directed to power modules. Support for new claims 73-124 can be found throughout the application as filed. Therefore, no new matter has been added.

Each of claims 73-98 recites an insulating substrate board comprising, in part, a metal alloy layer consisting essentially of aluminum with one of Si, Mn, Cu, Zn, Mg, and Ni, or aluminum and Si with one of Mn, Cu, Zn, Mg, and Ni, and having a Vickers hardness in the range of not less than 25 and not more than 35. The metal alloy layer is bonded by direct bonding or through a brazing material to a ceramic substrate board. Each of claims 73-98 also recites a Vickers hardness of the metal alloy layer of not less than 25 and not more than 35.

Similarly, each of claims 99-124 recites a power module comprising metal alloy layers consisting essentially of aluminum with one of Si, Mn, Cu, Zn, Mg, and Ni, or aluminum and Si with one of Mn, Cu, Zn, Mg, and Ni, and having a Vickers hardness in the range of not less than 25 and not more than 35. The metal alloy layers are bonded by direct bonding or through a

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brazing material to a ceramic substrate board. Each of claims 99-124 also recites a Vickers hardness of the metal alloy layer of not less than 25 and not more than 35.

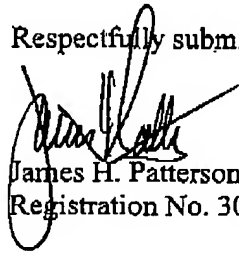
According to the present invention, a high thermal cycle resistance can be obtained. Specifically, a ceramic substrate board according to the invention can be protected from, for example, thermal shock and brazing material cracking in a thermal cycle of 3,000 by specifying a metal alloy composition and Vickers hardness range, providing a reliable substrate board or power module.

The cited references, alone or in combination, neither teach nor suggest the insulating substrate boards and power modules of new claims 73-124. The cited references neither teach nor suggest the metal alloy layers consisting essentially of aluminum with one of Si, Mn, Cu, Zn, Mg, and Ni, or aluminum and Si with one of Mn, Cu, Zn, Mg, and Ni, and having a Vickers hardness in the range of not less than 25 and not more than 35, as recited in combination with the other elements of the claims. Applicants therefore respectfully submit that claims 73-124 are allowable.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,


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